

**IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS
AUSTIN DIVISION**

**KLA-TENCOR CORPORATION, Individually
and d/b/a KLA-Tencor, Inc.,
Plaintiff,**

-vs-

Case No. A-08-CA-723-SS

**XITRONIX CORPORATION,
Defendant.**

O R D E R

BE IT REMEMBERED on this day the Court reviewed the file in the above-styled cause, and specifically Plaintiff KLA-Tencor Corporation (“KLA”)’s Motion for Judgment as a Matter of Law of Infringement [#192], KLA’s Motion for Judgment as a Matter of Law of Validity [#193], KLA’s Motion for Judgment as a Matter of Law of No Indefiniteness [#191], Xitronix Corporation (“Xitronix”)’s Motion for Judgment as a Matter of Law and on the Verdict [#194] and Xitronix’s Supporting Brief [#195]. Having reviewed the motions, responses, applicable law, and case file as a whole, the Court issues the following opinion and orders.

Background

The trial in this case began on November 1, 2010 and concluded with a jury verdict on November 5, 2010. The jury returned a verdict finding Xitronix had infringed Claim 7 of the ‘441 patent but had not infringed any other claims. Verdict [#189] at 1. The jury also found, however, that Claim 7 of the ‘441 patent was invalid as anticipated by prior art, namely the ‘611 patent and

the Therma-Probe device. *Id.* at 2. Further, the jury found all of the asserted claims—7, 9, 11, and 12—of the ‘441 patent were invalid due to obviousness. *Id.* at 3.

The ‘441 patent is titled “Modulated Reflectance Measurement System Using UV Probe” and relates to a system which provides high resolution, non-destructive evaluation of product wafers as they pass through various semiconductor fabrication stages. The claims at issue—7, 9, 11, and 12—all dealt with the wavelength of the probe beam used in this system. The claims required the “wavelength of the probe beam is between 353 nm and 410 nm and is selected to substantially maximize the strength of the output signals corresponding to the modulated optical reflectivity response.” ‘441 Patent at 8:17-41, 43-59, 62-65. It was undisputed that Xitronix’s device operated at 373 nm, but the question was whether the device substantially maximized the strength of the output signals.

Xitronix only had a prototype product, which was since disassembled, and the parties stipulated there were only nominal damages. Thus, this suit was solely a fact dispute about whether Xitronix’s probe beam of 373 nm resulted in output signals which were substantially maximized and thus the device infringed on the patent. The parties were even mostly in agreement about the maximum output signal, at least for crystalline silicon. Thus, the only issue was whether the output signal from Xitronix’s device was substantially at the maximum or not. This clearly raises issues of the scope of the claim and the subjectivity of the word “substantial.” Due to the lack of a device, the jury was essentially presented a series of graphs documenting the outputs of Xitronix’s prototype and they were left to determine, essentially, if the output signal from 373 nm was close enough to the peak to be “substantially maximizing” or if it was far enough away to not be infringing. Xitronix

also presented evidence that the patents were invalid as anticipated and obvious in light of the prior art.

Following the jury's verdict, the Court ordered both sides to brief the issue of indefiniteness which had not been previously explored in the summary judgment filings. The Court was concerned with whether a person of ordinary skill in the art would know at what point a device would be infringing and at what point it would not.

In its briefing, Xitronix moves that judgment be entered as found by the jury. Additionally, Xitronix moves that judgment be entered that the claims-in-suit, claims 7, 9, 11, and 12 of the '441 patent, are invalid for indefiniteness. For its part, KLA moves for judgment as a matter of law of infringement, no indefiniteness, and the validity of the patent claims over the jury findings of anticipation and obviousness. KLA did not, however, move for a new trial.

Analysis

I. Indefiniteness

A. Legal Standard

The Court first addresses the issue of indefiniteness. In order to be valid, a patent claim must "particularly point[] out and distinctly claim[] the subject matter which the applicant regards as his invention." 35 U.S.C. § 112, ¶ 2. This is known as the definiteness requirement. *See Datamize, LLC v. Plumtree Software, Inc.*, 417 F.3d 1342, 1347 (Fed. Cir. 2005). The purpose of this requirement "is to ensure that the claims delineate the scope of the invention using language that adequately notifies the public of the patentee's right to exclude." *Id.* (citing *Honeywell Int'l, Inc. v. Int'l Trad Comm'n*, 341 F.3d 1332, 1338 (Fed. Cir. 2003)). A patent is presumed valid, however, so there must be clear and convincing evidence of indefiniteness in order for the Court to find the

claims invalid. *See Hearing Components, Inc. v. Shure Inc.*, 600 F.3d 1357, 1366 (Fed. Cir. 2010).

When examining an allegation of indefiniteness, general principles of claim construction apply. *See Oakley, Inc. v. Sunglass Hut Int'l*, 316 F.3d 1331, 1340-41 (Fed. Cir. 2003). Intrinsic evidence—the patent specification and prosecution history—is the most important evidence when addressing indefiniteness. *Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (en banc). However, a court may also consider extrinsic evidence, including expert testimony. *Id.* at 1317.

A claim is invalid for indefiniteness if those skilled in the art would not understand what is claimed. *Young v. Lumenis, Inc.*, 492 F.3d 1336, 1346 (Fed. Cir. 2007). The test for definiteness is “whether one skilled in the art would understand the bounds of the claim when read in light of the specification.” *LNP Eng’g Plastics, Inc. v. Miller Waste Mills, Inc.*, 275 F.3d 1347, 1359 (Fed. Cir. 2001) (internal quotations omitted). Claims are only indefinite when they are “not amenable to construction or [are] insolubly ambiguous.” *Star Sci., Inc. v. R.J. Reynolds Tobacco Co.*, 537 F.3d 1357, 1371 (Fed. Cir. 2008). “[A] patentee need not define his invention with mathematical precision in order to comply with the definiteness requirement.” *Invitrogen Corp. v. Biocrest Mfg., L.P.*, 424 F.3d 1374, 1384 (Fed. Cir. 2005).

The Federal Circuit has noted the definiteness problems which arise when “words of degree” such as “about,” “approximately,” and “substantially” are used in a claim. *Seattle Box Co. v. Indus. Crating & Packing, Inc.*, 731 F.2d 818, 826 (Fed. Cir. 1984).

Definiteness problems often arise when words of degree are used in a claim. That some claim language may not be precise, however, does not automatically render a claim invalid. When a word of degree is used the district court must determine *whether the patent's specification provides some standard for measuring that degree*.

Id. (emphasis added). Thus, there must be an objective standard to determine the scope of a word of degree such that a person of ordinary skill in the art would understand what is claimed when the claims are read in light of the specification. *See id.*

B. The Asserted Claims are Indefinite

When there is an objective standard to determine the scope of the word of degree, the word of degree does not render the claims indefinite. *See, e.g., Cordis Corp. v. Medtronic AVE, Inc.*, 339 F.3d 1352, 1360-62 (Fed. Cir. 2003); *Ecolab, Inc. v. Envirochem, Inc.*, 264 F.3d 1358, 1367 (Fed. Cir. 2001). However, when there is no objective standard by which to determine the scope of the word of degree, the word of degree renders the claims indefinite. *See, e.g., Amgen, Inc. v. Chugai Pharm. Co.*, 927 F.2d 1200, 1217-18 (Fed. Cir. 1991) (holding the term “about” in “at least about 160,000 IU/AU” rendered the phrase (and the claim) indefinite because it did not “permit one to know what specific activity below 160,000, if any, might constitute infringement”); *Standard Oil Co. v. America Cyanamid Co.*, 774 F.2d 448, 453 (Fed. Cir. 1985) (affirming the district court’s holding of indefiniteness because “‘partially soluble’ was too vague to ‘particularly point out and distinctly claim’ the subject matter of the invention as required by the second paragraph of § 112.”)

In Claims 7, 9, 11, and 12 of the ’441 Patent, the word of degree—“substantially”—is modifying “maximize the strength of the output signal” Therefore, to be definite, there must be some objective standard that denotes when the probe beam wavelength is selected to “substantially maximize the strength of the output signal.” While there need not be a numerical limitation it must be more than just a purely subjective standard. *Datamize*, 417 F.3d at 1353. The term “substantially” appears nowhere within the ’441 Patent other than in Claims 7 and 9. Ex. K-1. Thus, there is no standard for determining what is substantially maximizing in the patent itself. In

addition, the context of “substantially” in these claims provides no objective standard to determine wavelengths that are infringing. In short, the patent fails to objectively define the level at which the output signal is substantially maximized.

The prosecution history of the ’441 Patent likewise provides no objective standard. The first time the term “substantially” appeared in the prosecution history was when KLA added new Claims 7-12 into the ’441 Patent Application in August 2007. Ex. K-2, at KLA000050-54. There was no discussion (or even a suggestion) then or thereafter in the prosecution history as to what this claim limitation meant. *See, e.g.*, Ex. K-2, at KLA000033-36. Further, both parties’ experts failed to provide any objective standard for “substantially.”

Q. Okay. Now, the language that we’re talking about in the claim, substantially maximize, does that require you to pick the very peak of these signals we just saw?

A. No. If we were to pick the peak, it wouldn’t say substantially. It would just say maximize. But in practice is anybody who’s ever tried to maximize anything knows, it’s very difficult to find the maximum and therefore, substantially is used indicating that that’s good enough.

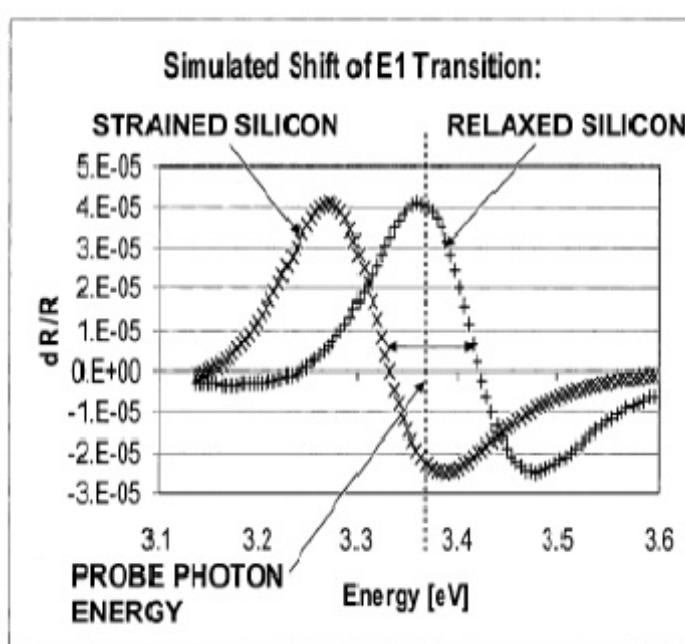
11/1/2010 Transcript,2 at 126:3-10.3. This is not an objective standard. The expert testimony in *Amgen* that “somewhere between 155,000”and 160,000 “might” cover the term “about 160,000 IU/AU,” was found to be insufficient to show an objective standard. *Amgen*, 927 F.2d at 1218. So to is KLA’s expert’s testimony that it is difficult to find the maximum “and therefore, substantially is used indicating that that’s good enough” is likewise insufficient. Accordingly, there is no objective standard for determining what is meant by “substantially maximize.” Since this limitation is found in each of Claims 7, 9, 11, and 12, each of these claims are invalid due to indefiniteness.

KLA argues that both experts testified they understood “substantially maximize” to mean near the peaks, the claims cannot be indefinite. While both experts recognized the phrase to mean

the selected wavelength *corresponds* to a local maximum or peak in the strength of the output signal provided by the photodetector to the processor, the specific disagreement in the case, and the disagreement between the experts consisted of exactly what level of correspondence was necessary for infringement. In other words, how close one would have to be to the peak in order to be “substantially maximizing.” Indeed, the experts differed in their opinion with regard to whether the output signals were “at or near the peak.” *See* Br. [#191] at 5.

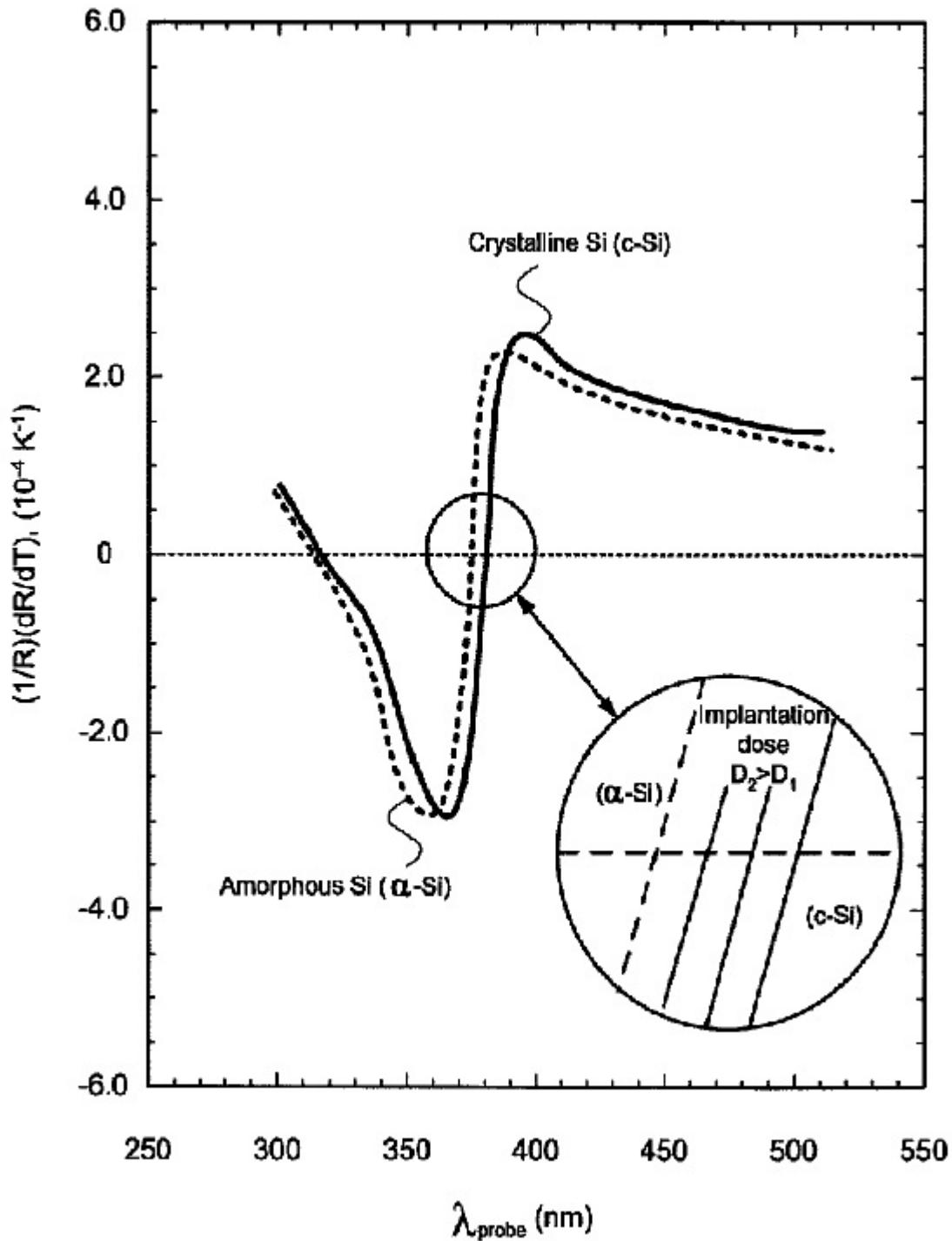
Figure four below puts the problem into perspective. The dotted line represents the output signal from Xitronix’s device. Is the dotted line corresponding to a local peak of the output signal?

Is the device “substantially maximizing?” What if the output signal was 1/8 inch to the right—would that be “substantially maximizing?” Most importantly, how can another inventor know what is covered by the term and thus what would constitute infringement. The result would be ad hoc litigation each time KLA felt threatened by a competitor and thought the line was close enough that they could convince



a jury it was “substantially maximizing.” This is not the purpose of the patent system.

KLA argues, and Xitronix does not strongly dispute, that the peaks—both high and low—occur “around 373-375 nm and 360-362 nm.” Br. [#191] at 5, Figure below.



This does not help one of ordinary skill to know what the claims mean.¹ If Xitronix chooses a wavelength at 363 nm or 372 nm, will the output signal be far enough away from the peak to avoid infringement? Does “around 373 nm” include 373 nm, and thus make Xitronix’s device infringing? There is no answer for this in the patent and no answer in the extrinsic evidence. This is exactly the ambiguity that exists because of the word “substantially” and it is because of this ambiguity, and the lack of an objective standard for defining how close to the maximum one must be in order to infringe, that renders these claims invalid for indefiniteness.

Indeed, in this case, the jury found infringement, understandably based on the figures above, and the subsequent finding of anticipation in the Therma-Probe device. In short, since the Therma-Probe device met all the limitations of claim 7 of the ‘441 patent such that the jury found the claim invalid due to anticipation, and since Xitronix used a modified Therma-Probe device in its invention, it is unsurprising the jury would find infringement. In addition, even without any scientific knowledge whatsoever, one could reasonably find the vertical line is near the peak of the curve. The problem is that the patent fails to identify, as both experts indicated, whether it is close enough to be substantially maximizing. Just as a party should be able to tell from the patent whether its device is infringing, it should also be able to create a device that does not infringe, and this patent does not outline what the patent covers sufficiently to declare the outer boundaries. Thus, the Court finds claims 7, 9, 11, and 12 of the ‘441 patent are invalid because the phrase “substantially maximize the strength of the output signal” is indefinite.

¹Adding to the lack of precision in the meaning of “substantially maximizing,” this graph, which comes from the patent itself, with an x-axis noting nanometers in increments of ten, was the most precise offered by either side.

II. Anticipation and Obviousness

Even if the Court were not to find the patent invalid for indefiniteness, the Court would enter judgment based on the jury verdict finding invalidity for anticipation and obviousness.

A. Jury Verdict

The jury found Xitronix had infringed Claim 7 of the patent, but the jury also found the claims were invalid due to anticipation and obviousness. As such, the finding of infringement is overridden. Anticipation and obviousness are affirmative defenses. *See 25 U.S.C. § 102-103.* Since the jury found for Xitronix on the defenses, the claims are invalid and there is no infringement, by definition. *See Richdel, Inc. v. Sunspool Corp.*, 714 F.2d 1573, 1580 (Fed. Cir. 1983) (holding that once a claim is found invalid “there is nothing to be infringed”).

B. Ample Evidence to Support Verdict

Despite KLA’s arguments that it is entitled to judgment as a matter of law that the asserted claims are neither anticipated nor obvious, the jury had ample evidence to find invalidity. While the commercial version of the Therma-Probe device did not include the limitation of wavelength selection, there was substantial evidence as to the design of the Therma-Probe device, including expert testimony that it was well known by those of ordinary skill in the art that any wavelength could be used for the probe beam. *See* Br. [#200] at 6. Indeed, Dr. Salnik testified that the choice of the probe wavelength in the commercial embodiment of the prior art Therma Probe device was a design choice made by KLA, but that any probe beam wavelength could be used. 11/2/2010 Tr. at 91:9-25. Dr. Aspnes testified it was well known for forty years that the entire range of probe beam

wavelengths were utilized in modulated optical reflectivity devices. 11/1/2010 Tr., at 124:10-126:2. Thus, the jury had substantial evidence supporting that the Therma-Probe device encompassed all limitations of Claim 7 of the '441 patent.

Finally, the jury found all the asserted claims were invalid for obviousness and there was substantial evidence to support this finding as well. The "combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 416 (2007). This is particularly true when the invention is the "simply substitution of one known element for another." *Id.*, at 417. This is exactly the situation in this case.

There was detailed testimony from both Dr. Current and Dr. Aspnes regarding the scope of the prior art. *See* 11/2/2010 Tr. (Part 2), at 31:13-35:23, 47:3- 55:18; 11/3/2010 Tr., at 83:15-87:25; 96:20-100:4. The commercial embodiment of the Therma-Probe device met every limitation of the device and methods of the claims-in-suit, except for the probe wavelength selection limitation. 11/1/2010 Tr., at 128:18-129:8; 11/3/2010 Tr., at 80:3-81:1; 81:23-82:2. As for this remaining limitation, Dr. Current testified how each of Batista and Mansanares separately taught that changing the probe beam wavelength to a wavelength in the range of 355 and 410 would increase the strength of the output signal of a modulated optical reflectivity device. 11/3/2010 Tr. 85:9-87:25, 95:19-25, 96:20-100:4. Dr. Aspnes concurred that Batista taught this. 11/2/2010 Tr. (Part 2), at 31:13-34:10. Indeed, the '441 Patent used the exact same graph shown in Batista (and Mansanares) to select this wavelength. 11/2/2010 Tr. (Part 2), at 44:1-18. Therefore, the scope and content of the prior art and the difference or differences, if any, between each claim and the prior art, reflect that each and every element of the asserted claims were present in the combination of prior art Therma-Probe, Batista,

Mansanares, and the '611 patent. Indeed, as substantial evidence reveals, all that was required was to substitute one probe beam for another in the prior art Therma-Probe device using the teachings of either Batista or Mansanares.

In addition, Substantial evidence was presented that established the motivation whereby a person of ordinary skill would make this simple substitution and see there was benefits in doing so. The inventors and the experts testified that it was known by persons of ordinary skill that overcoming noise problems would improve the commercial embodiment of the prior art Therma-Probe device, and this problem was overcome by increasing the strength of the output signal. 11/2/2010 (Part 2), 37:18-38:14, 81:13-22; 105:6-11; 11/3/2010 Tr., at 64:22-65:5, 99:9-16. Batista and Mansanares each individually taught that changing the probe beam wavelength from 670 to a particular wavelengths in the range of 355 to 410 would increase the output signal by a factor of ten. 11/2/2010 Tr. (Part 2), at 32:17-34:10; 11/3/2010 Tr., at 85:19-87:2, 96:20-98:4. This was strong motivation for a person of ordinary skill to change the wavelengths of the prior art Therma-Probe device and method using the teachings of Batista or Mansanares. Thus, a reason existed at time of the effective filing date of the '441 Patent that prompted a person of ordinary skill to change the wavelength of the probe beam in the prior art Therma-Probe device to a wavelength that increased the strength of the output signal, which reflects the obviousness of the claims. There was substantial evidence to support the jury's finding of anticipation and obviousness. As such, the claims are invalid and Xitronix cannot have infringed, as a matter of law.

III. Attorneys' Fees

Finally, Xitronix moved for judgment finding this to be an "exceptional" case under 35 U.S.C. § 285 and thus awarding Xitronix its attorneys' fees. As discussed above, the jury found

Xitronix had infringed, but Xitronix was successful in its affirmative defenses. Xitronix argues that KLA's pursuit of claims relating to the '690 patent, which were eventually dropped, were vexatious and added time and expense to the litigation of this case. However, the jury's finding of infringement indicates KLA's claims were reasonable. Further, Xitronix filed the suit. While KLA may have mounted vigorous counterclaims, it only did so because litigation was initiated by Xitronix. This is hardly an exceptional case.

Conclusion

Claims 7, 9, 11, and 12 of the '441 patent are invalid for indefiniteness. Further, there was substantial evidence for a reasonable jury to find claim 7 was invalid as anticipated and claims 7, 9, 11, and 12 were invalid for obviousness. As such,

IT IS ORDERED that Xitronix's Motion for Judgment as a Matter of Law of Indefiniteness and on the Verdict [#194] is GRANTED.

IT IS FURTHER ORDERED that KLA-Tencor's Motions for Judgment as a Matter of Law [# 191, 192, 193] are DENIED.

SIGNED this the 31st day of January 2011.



SAM SPARKS
UNITED STATES DISTRICT JUDGE